

NEW ZEALAND  
PATENTS ACT, 1953

No: 335467

Date: 28 April 1999

**COMPLETE SPECIFICATION**

**"BIFOLD DOOR OR WINDOW TRANSOMS"**

We, **FLETCHER ALUMINIUM LIMITED**, a company duly incorporated under the laws of New Zealand of 30 Bowden Road, Mt Wellington, Auckland, New Zealand, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

The present invention relates to a bifold door or window transom and relates to uses and assemblies thereof.

Extruded door or window transoms are common place.

The present invention however recognises an advantage to the "I" value of an extruded transom being increased to minimise window/door, inward/outward deflections without an excessive intrusion into the interior of a building envelope.

In a first aspect the invention consists in a door or window transom provided in part by an extrusion having

a) a hollow box section to be positioned substantially entirely inwardly of a building envelope, the hollow box section in cross section being substantially rectangular with the major axis of the at least substantially rectangular form (hereafter "rectangle") adapted to lie vertically in use, there being at or adjacent one face of the rectangle, on a side thereof to be proximate to a glazing or other panel, a seal retention feature for a seal to be interposed between said first hollow box section and a said panel and

b) a second section integrally formed with said first hollow box section to extend therefrom exteriorly of said glazing or other panel.

Preferably said second mentioned section is a hollow box section

Preferably there are two spaced seal retention features on one side of the rectangle, each seal retention feature to be proximal to a glazing or other panel.

Preferably interposed between said two spaced seal retention features is a part of the extrusion to extend inwardly of the glazing or other panels.

Preferably that part of said second mentioned section to extend exteriorly of the glazing or other panels is adapted to engage one or more members (eg; glazing beads) adapted to retain such glazing or other panels to seals fitted or to be fitted to said seal retention features.

Preferably the general proportions of the rectangle are substantially as herein described with reference to any of the accompanying drawings.

Preferably the proportions of the rectangle are such that the major axis of the rectangle is twice or more that of the substantially horizontal minor axis in use.

Preferably said transom is for a bifold door or window assembly.

In another aspect the invention is a **door or window assembly** that includes a transom of the present invention.

In a further aspect the invention is a **bifold door or bifold window assembly** that includes a transom as defined herein.

In another aspect the invention is **the use of a transom** of the present invention.

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In yet another aspect the invention is **an extrusion for use as part of a door or window transom** having any one or more of the features substantially as herein described with reference to any one or more of the accompanying drawings.

In another aspect the invention is **an extrusion providing or to provide (at least part of) a transom**, said extrusion having an inward/outward flexure resisting hollow box section of a form and/or of proportions substantially as shown to the left of

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"A-A" in Figure 1 hereof.

The invention also is **an extrusion providing or to provide (at least part of) a transom**, said extrusion having an inward/outward flexure resisting hollow box section of a form and/or of proportions substantially as shown to the left of "B-B" in Figure 1 hereof.

The invention also is **an extrusion providing or to provide (at least part of) a transom**, said extrusion having an inward/outward flexure resisting hollow box section of a form and/or of proportions substantially as shown to the left of "C-C" in Figure 4 hereof.

The invention also is **an extrusion providing or to provide (at least part of) a transom**, said extrusion having an inward/outward flexure resisting hollow box section of a form and/or of proportions substantially as shown to the left of "D-D" in Figure 5 hereof.

Preferably the hollow box section is substantially in the form of a rectangle and the major axis of such rectangle is to extend vertically and is at least twice the minor axis of the rectangle.

The invention is **a transom including assembly** where a component is apparatus of the present invention.

Preferred forms of the present invention will now be described with reference to the accompanying drawings in which;

**Figure 1** shows the section of one form of the extrusion,

**Figure 2** shows an alternative form of the extrusion,

**Figures 3A and 3B** show how a similar "I" value against flexure is obtained for each of two extrusions, that of Figure 3A having the aesthetics of less internal intrusion and less visible flanges,

**Figure 4** shows one preferred form of the present invention where a glazing panel or the like is to be engaged on either side, and

**Figure 5** shows another preferred form of the present invention of the type suitable for use in a bifold window or door arrangement, and

**Figure 6** shows a cross sectional view of the transom depicted in Figure 4 in an assembly arrangement with both top and bottom glazing panels, and

**Figure 7** is similar to Figure 6 however in this case the lower portion of the transom remains free of any glazing panel and thus capable of engaging a bifold window or door.

Figure 1 shows a preferred end view of an aluminium extrusion where the extrusion includes a substantially rectangular hollow box section 1 having its minor

axis providing top and bottom platforms 2 and 3 respectively and an inner display face 4 preferably of equal vertical extent in use to the face 5 supporting the backing rubber or other flexible seal retention features 6.

The retention features 6 are substantially of the kind disclosed in a New Zealand Patent Specification filed simultaneously herewith where the asymmetric form of the lips (with the larger lip as far as inward extent is concerned being at the more distal position) set in (from the edge of the extrusion) the backing rubber.

The remainder of the extrusion as depicted preferably includes a second box section 7 that adds to the resistance to inward and outward flexure.

Preferably box section 7 has inward screw channels 8. A still additional screw channel 10 is preferably provided on an outer extension 11.

It is believed that a bifold door or window transom extrusion of the form depicted having preferably a rectangular box section to be positioned internally within the building envelope provides a significant advantage where, as here, preferably the interior box section part has its major axis aligned parallel to the opening in the building envelope to be closed by the bifold door or window.

Figures 3A and 3B, by way of example, depict box section forms of substantially equal inward/outward "I" value, that of the present invention (Figure 3A) not having the outwardly extending seal location channels nor as much internal penetration.

In the form of the invention shown in Figure 4 the hollow box section defining a substantial rectangular box form 12 preferably possesses a substantially rounded inner display face 13.

Preferably this form of the invention provides at least one or more internal screw channels 14 on the non visible side of the interior vertical face 15.

Yet another feature of the preferred embodiment depicted in Figure 4 is the relative thickness of the of the internal facing wall 13 which is preferably at least twice the thickness of the adjacent upper and lower horizontal walls denoted by 16 and 17 respectively.

In still a further preferment, the exterior facing wall 18 is substantially of a thickness of at least twice that of the adjacent walls 19 and 20.

Those persons skilled in the art will appreciate that the aforementioned increased thickness at the outer most extremities of the section, results in an increased resistance to inward and outward flexure.

Figure 5 is similar to Figure 4 in that a the main flexure resisting box section to the left of "D-D" comprises of the same features as those detailed above. The transom

section shown in Figure 5 is preferably intended for use in a bifold window or door system where the substantially open box section 21, provides the means for tracking translating devices of the type commonly used in bifold window and/or door arrangements. Preferably, the open box section provides guides 22 for tracking such devices.

Figure 6 shows a cross sectional view of the transom extrusion from Figure 4 as it would appear in an assembly comprising two adjacent glazing panels 23, glazing beads 24 (perhaps of a form substantially as disclosed in our NZ 335466), and seals 25.

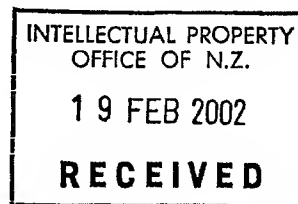
Figure 7 is similar to that of Figure 6 however in this case the transom of Figure 5 is shown as it would appear in an assembly comprising a single glazing panel 26 installed directly above the transom.

**WHAT WE CLAIM IS:**

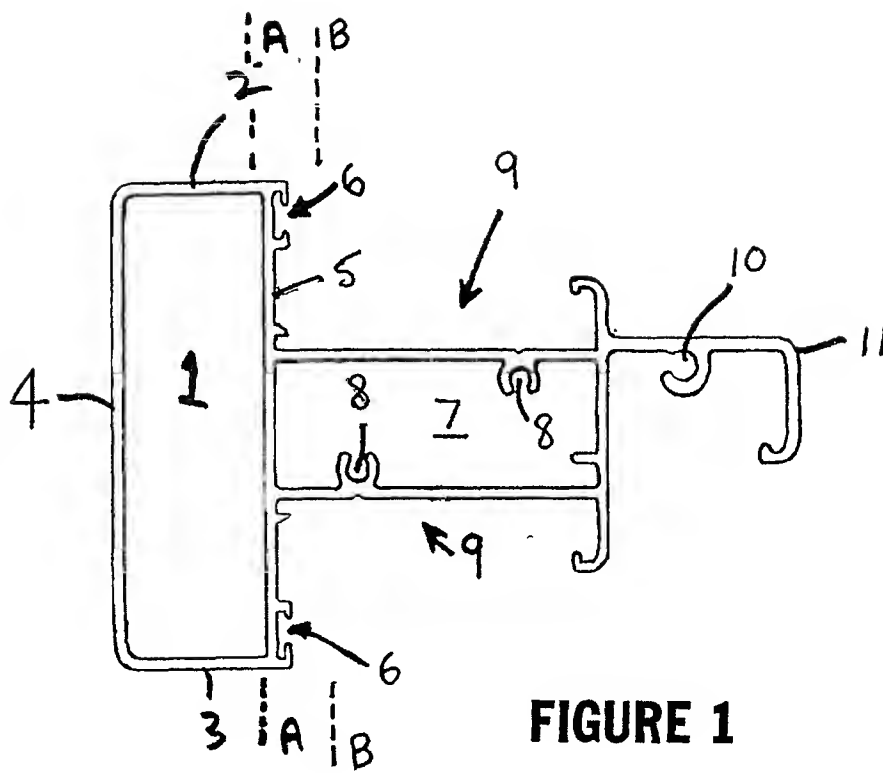
1. A door or window transom provided in part by an extrusion having
  - a) a hollow box section to be positioned substantially entirely inwardly of a building envelope, the hollow box section in cross section being substantially rectangular with the major axis of the at least substantially rectangular form (hereafter "rectangle") adapted to lie vertically in use, there being at or adjacent one face of the rectangle, on a side thereof to be proximate to a glazing or other panel, a seal retention feature for a seal to be interposed between said hollow box section and a said panel and
  - b) a section to extend from and integrally formed with said hollow box section to extend therefrom exteriorly of said glazing or other panel.
2. A transom as claimed in claim 1 wherein said second mentioned section is a box section.
3. A transom of claims 1 or 2 wherein there are two spaced seal retention features on one side of the rectangle, each seal retention feature to be proximal to a glazing or other panel.
4. A transom of claim 3 wherein interposed between said two spaced seal retention features is a part of the extrusion to extend inwardly of the glazing or other panels.
5. A transom as claimed in claim 4 wherein the second mentioned section to extend exteriorly of the glazing or other panels is adapted to engage one or more members adapted to retain such glazing or other panels to seals fitted or to be fitted to said seal retention features.
6. A transom as claimed in any one of the preceding claims wherein the general proportions of the rectangle are substantially as herein described with reference to any of the accompanying drawings.
7. A transom of any one of the preceding claims wherein the proportions of the rectangle are such that the major axis of the rectangle is twice or more that of the substantially horizontal minor axis.
8. A transom as claimed in any one of the preceding claims for a bifold door or window assembly.
9. A door or window assembly that includes a transom as claimed in any one of the preceding claims.
10. A bifold door or bifold window assembly that includes a transom as claimed in any one of claims 1 to 8.
11. The use of a transom as claimed in any one of claims 1 to 8 in a structure.
12. An extrusion for use as part of a door or window transom having any one or more of the features substantially as herein described with reference to any one or more of the accompanying drawings.

13. An extrusion providing or to provide a transom, said extrusion having an inward/outward flexure resisting section of a form and/or of proportions substantially as shown to the left of "A-A" in Figure 1 hereof.
14. An extrusion providing or to provide a transom, said extrusion having an inward/outward flexure resisting section of a form and/or of proportions substantially as shown to the left of "B-B" in Figure 1 hereof
15. An extrusion providing or to provide a transom, said extrusion having an inward/outward flexure resisting section of a form and/or of proportions substantially as shown to the left of "C-C" in Figure 4 hereof.
16. An extrusion providing or to provide a transom, said extrusion having an inward/outward flexure resisting section of a form and/or of proportions substantially as shown to the left of "D-D" in Figure 5 hereof.
17. An extrusion of any one of claims 14 to 16 wherein the flexure resisting section includes a hollow box section substantially in the form of a rectangle and the major axis of such rectangle is to extend vertically and is at least twice the minor axis of the rectangle.
18. A transom including assembly where a component is apparatus of any one of claims 1 to 8 and 11 to 16.

DATED THIS 18<sup>th</sup> DAY OF February 2002  
AJ PARK  
PER *V. Liley*  
AGENTS FOR THE APPLICANT

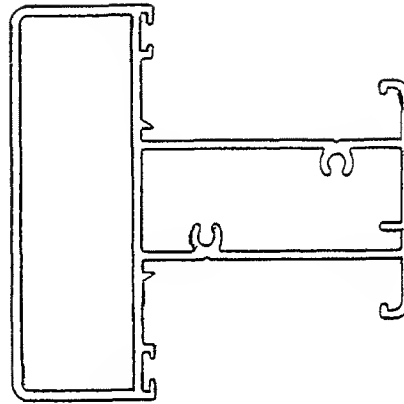






**FIGURE 1**

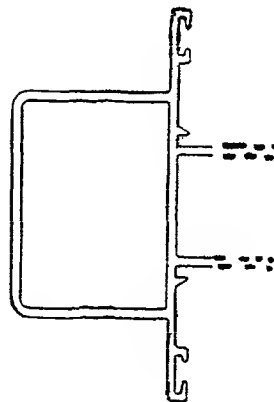
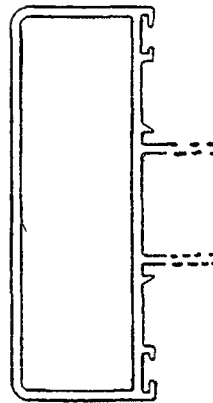
**FIGURE 2**



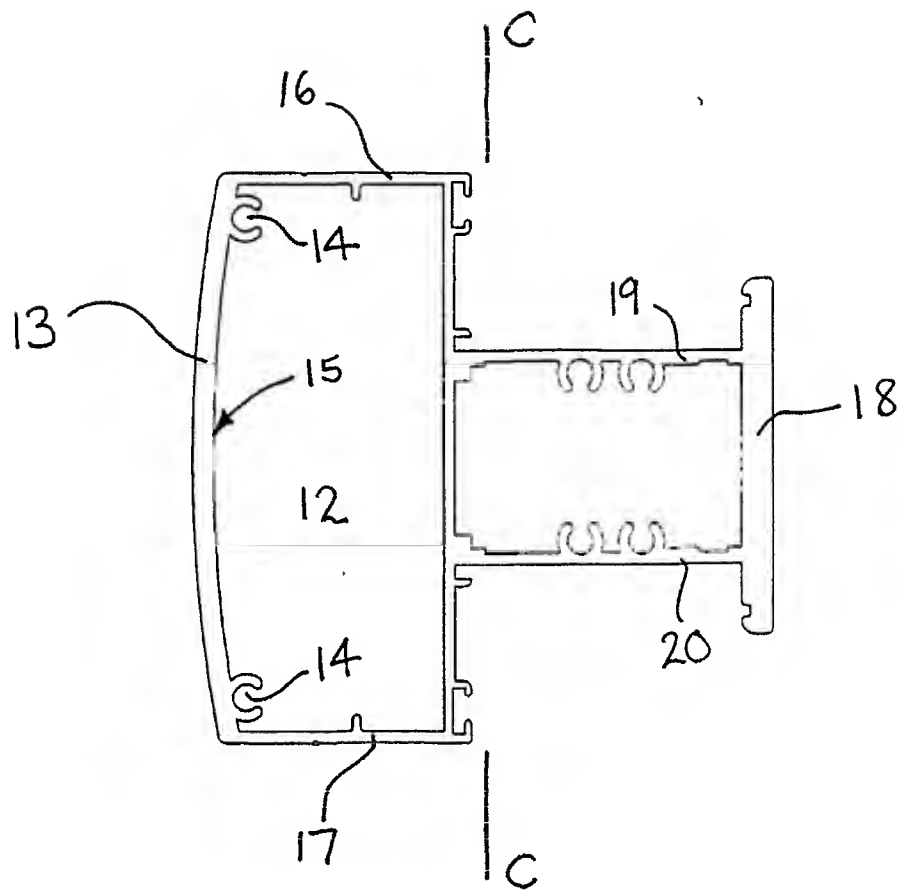
'I' VALUE



**FIGURE 3A**



**FIGURE 3B**



**FIGURE 4**

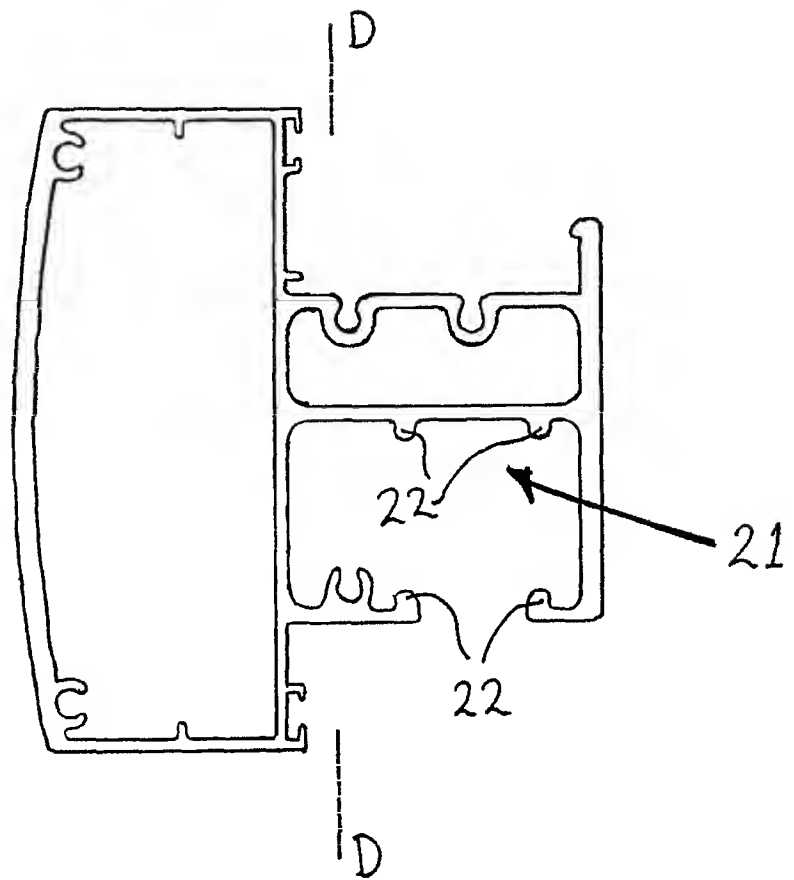


FIGURE 5

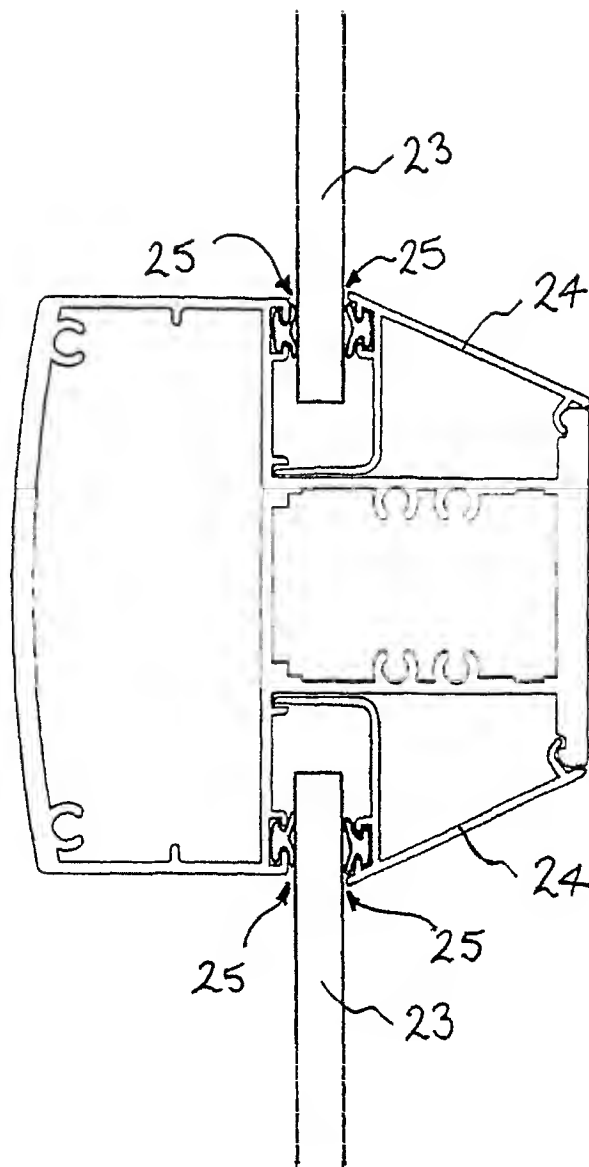
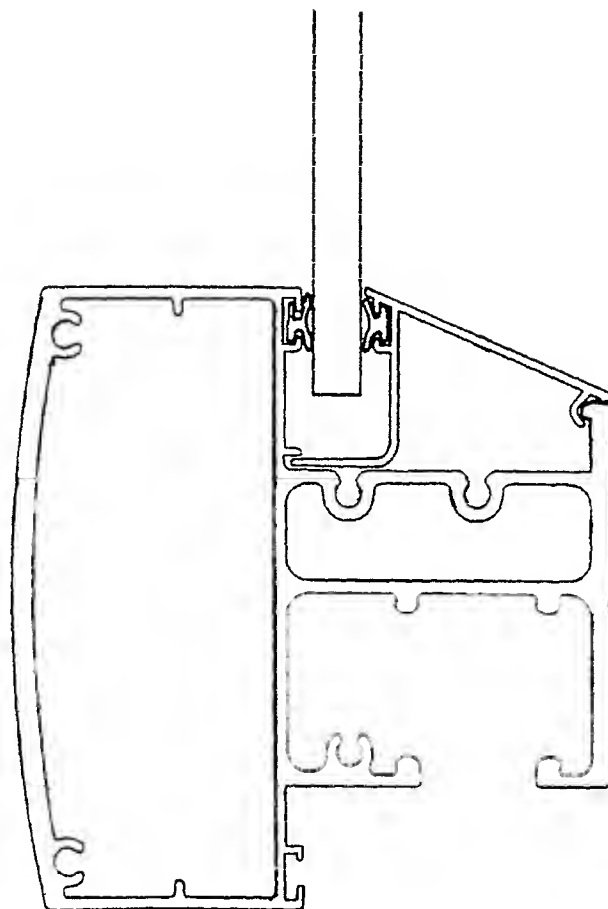


FIGURE 6



**FIGURE 7**